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FROM *DOLLAR PEG* TO *BASKET PEG* : THE EXPERIENCE OF KUWAIT IN VIEW OF THE GCC MONETARY UNIFICATION

Abstract

In May 2007, Kuwait unilaterally dropped the dollar peg, which had been adopted in 2003 as a first step towards the monetary integration of GCC countries, to return to the previous basket peg system. The decision was motivated by the need to curb inflationary pressures arising from prolonged depreciation of the dollar against major currencies. Given the relevance of the anti-inflationary objective in this choice, this work will focus on the peculiarities of Kuwait's economy in order to justify it and review the dynamics of prices in the light of re-pegging to a basket, believing that its composition was affected by inflationary trends. To this end, an "Auto-Regressive Moving Average" econometric model is proposed to define the weights of currencies in the basket and the estimation shows that the influence of the Euro has increased during the last period, consistent with the goals against inflation. This is of particular importance to the future of the planned monetary union of the GCC countries, given the renewed commitment of Kuwait to be part of it, despite the existence of different exchange rate systems in force in other countries.

JEL Classification: F15; F31; F32; F33; E31
Keywords: GCC countries; exchange rate regimes; basket peg; dollar peg; inflation

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1. Introduction

In December 2009, four countries of the Gulf Cooperation Council (GCC) - Saudi Arabia, Bahrain, Kuwait, Qatar - reconfirmed their commitment to proceed towards monetary unification, whose preliminary step, to be completed by 2010, is the foundation of the Gulf Monetary Council, embryo of the future Central Bank[1]. This decision renewed the interest in the exchange rate regime that will distinguish the integrated monetary area.

In 2003, the GCC countries pegged *de jure* their currencies to the dollar, as a first step towards the single currency, formalizing a system which *de facto* had already been in place for more than twenty years. Among the various reasons for this choice was also the awareness that pegging national currencies to the currency of a country with sound institutions and traditions of stability would enable the small economies in the area to import stability from the centre country and, consequently, credibility and confidence in their respective economies.

Although the *dollar peg* met their expectations for a long time, since 2002, due to unbalances in the economy of the United States and to divergent economic cycles in the GCC countries and the USA, it became a propagator of instability in the Gulf area, amplifying the inflationary impact of repeated increases in the price of oil. In this context, the economic debate began to indicate the superiority of a *basket peg* which included the currencies most used in financial and commercial transactions in the GCC countries, in order to stabilize the effective exchange rates, reduce fluctuations in trade and investment flows and gain a partial flexibility in the use of monetary policy. In particular, some empirical studies have confirmed the opportunity for the Gulf countries to prefer a *basket peg* over a *dollar peg* (Abed, Nuri Erbas, Guerami, 2003; Aleisa, Hammoudeh, Yuan, 2008; Habib, Stráský, 2008); others have acknowledged its superiority in the case of an ongoing process of depreciation of the dollar (J.L.Rosmy and others, 2007); while still others have tried to ascertain the composition and role

[1]Oman and the UAE have not ratified the agreement. Oman, in particular, in December 2006 declared its inability to participate in the monetary union on the date originally scheduled for 2010, deeming the indicated fiscal constraints to be too stringent. The Emirates, in turn, withdrew from the agreement in May 2009 after the Council's decision to situate the headquarters of the Gulf Central Bank in Riyadh, rather than in their territory.

of the various currencies. Thus, the study of Aleisa, Hammoudeh, Yuan (2008) suggests a basket consisting of US dollars, euro and yen. With reference to a similar basket, Jen and Bindelli (2008) estimate the weight of the dollar to be 70% and that of the yen and the euro 15%. Considering the use of different currencies in trade and financial flows and in the composition of official reserves, Saidi, Scacciavillani, Prasad and Ali propose a basket consisting of 45 % dollars, 30% euro, 20 yen and 5 pounds (2008).

Our study follows this line of research, but differs from others as it focuses on the concrete experience of a country, Kuwait, which, after a brief experience of *dollar peg,* in May 2007 returned to the previous *basket peg* system, motivating its choice through the inflationary effects related to the exclusive link to the dollar. In the context of Kuwait's renewed commitment in December 2009 to participate in the monetary union, its decisions regarding the exchange rate system, different from those of the other countries in the area, gain great importance for the future of the planned integration and require careful examination of the reasons underneath which can give useful guidelines to the other economies of the GCC.

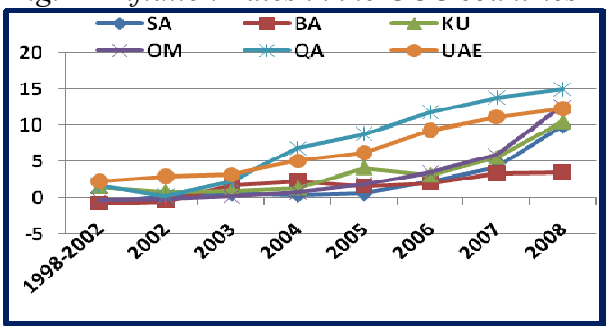
Given the importance of the anti-inflationary goal in the country's decision, this work focuses on the peculiarities of Kuwait's economy that explain its decision and reviews the dynamics followed by prices in the light of *re-pegging* to a *basket,* believing that its composition has influenced the inflationary trends and was, in turn, influenced by them. Since the Central Bank of Kuwait has not submitted neither the weights nor the currencies in which the *basket* consist, this study estimate them through an *Auto-Regressive Moving Average* econometric model that shows that in the period of our analysis the weight of the euro has increased, in order to adapt the composition of the basket to the inflationary goal.

2. The inflationary process in the GCC countries

After two decades of substantial price stability, at the beginning of the new millennium, the GCC economies have been characterized by rapid and significant inflationary processes. The average inflationary rate, measured by the consumer price index, in all GCC member countries, rose from 0.2 % between 1998 and 2002 to 10.8% in 2008, with peaks recorded in Qatar (15%), the UAE (12.3%), Oman (12.6%) and Kuwait

(10.5%). In Saudi Arabia, where inflation has always been under 1%, an increase in the consumer prices has been witnessed since 2006, leading to an inflationary rate of about 10% in 2008 (Fig. 1).

Fig.1 – Inflation Rates in the GCC countries [1]



Source: IMF, *Regional Outlook: Middle East and Central Asia*

[1] Legenda: SA (Saudi Arabia); BA (Bahrain); KU (Kuwait); OM (Oman); QA (Qatar); UAE (United Arab Emirates);

Several internal and international factors combined to fuel the inflationary process.

Among the internal ones, a key role was played by the growth in public spending and investments, facilitated by higher oil revenues stemming from the increase in demand and the prices of hydrocarbons. Higher investments, mainly in real estate, construction and services, have triggered income multiplication processes and increased demand for consumer goods that could not be promptly met by the supply. Inflationary pressures were, however, accentuated by the strong immigration flows that have accompanied the growth process and that raised the price of rents and fed speculative bubbles in real estate.

External factors also contributed to the increase in prices. Thus, between 2006 and 2008, the international increase in food prices heavily influenced inflationary dynamics in the economies of the area which are major importers of agricultural products and foodstuffs, due to their arid climate and scarcity of arable land and water. Similarly, the rising prices of raw materials, particularly iron and copper, have triggered cost and price hikes in the construction sector.

Several studies have attempted to isolate and quantify the contribution of the different components of inflation with reference to the entire area (S. Al-Qudsi and others, 2008; E. Woertz and others,

2008; N. Saidi and others, 2009) or individual countries (M. Hasan, H. Alogeel, 2008; M. Kandil, H. Morsy, 2009). However, although several factors have contributed to the rise in inflation, the original exchange rate regime adopted by the countries of the area played a fundamental role.

3. The inflationary effects of the *dollar peg* in GCC countries

For almost thirty years, Gulf economies have formally or informally tied their currencies to the dollar. Oman has officially pegged the riyal to the US currency since 1973, while Saudi Arabia, Bahrain, Qatar and the UAE, despite having *de jure* tied their currencies to the SDR until 2001, *de facto* pegged the dollar at a fixed rate since the eighties. Even the Kuwaiti dinar, which was formally tied to a *basket peg* until 2002, has always shown a pronounced stability against the dollar. However, as of January 1, 2003, as a first step towards full monetary union, the Gulf countries formally adopted a *dollar peg* monetary regime, pledging to adhere to a fixed exchange rate against the dollar. Thus, at present, the currencies of all the countries of the Gulf area are tied to the US dollar, with the exception of Kuwait which, in 2007, withdrew from the agreement by switching to a *basket peg*, whose composition has not been revealed.

The reasons justifying the choice of the *dollar peg* by the GCC members are manifold.

The most frequently mentioned one focuses on the importance of oil as a source of foreign exchange earnings for the economies of the region. Since international oil prices are quoted in dollars, linking the national currencies to the US dollar guarantees the stability of export earnings, protecting them against exchange risks. On the other hand, invoicing oil in dollars ensures to the oil-producing countries profits in a currency readily convertible in financial assets in a more liquid and articulated international market and anchoring the national currencies to the dollar minimizes currency risks arising from the holding of foreign reserves and financial assets in dollars.

However, there is also another important reason for choosing to link the Gulf currencies to the dollar. Indeed, given the delays that have characterized their financial, economic and institutional aspects, pegging national currencies to the currency of a country with strong institutions

and traditions of stability ensures credibility and confidence to the small economies of the region.

For over twenty years, anchoring to the dollar has allowed the GCC countries fundamentally stable price dynamics. However, since 2002, worsening internal and external US economy imbalances and different economic cycles in the GCC countries and the United States, made the dollar peg a propagator of instability from the anchor country to the Gulf, amplifying the inflationary impact of repeated increases in the price of oil through the liquidity and the cost effect.

The link with the US currency has transformed the oil surpluses recorded by the countries of the Gulf area in increases in the monetary base, preventing at the same time, the possibility to control it, due to the need to avoid speculative capital flows. This led to the alignment of GCC member interest rates to the lower US rates, encouraging the resort to borrowing and the credit expansion, at a time when the rapidly growing economies of the area would have required more stringent monetary policies. The increase in money supply in its broadest definition, has thus fuelled and blunted the rise of internal tensions, which strayed into speculative bubbles such as those that affected the stock market and real estate.

Besides the liquidity effect, a cost effect resulted from the depreciation of the dollar against the currencies of major trading partners of the Gulf countries and, in particular, the EU and Japan. It resulted, in fact, in an increase of prices in domestic currency for a wide range of imported goods, with significant repercussions on the costs of domestic production, living and wage trends. Essentially, the redistribution effects of inflation, in the presence of an expansion in currency circulation, increased the imbalance, driving hikes on the cost side.

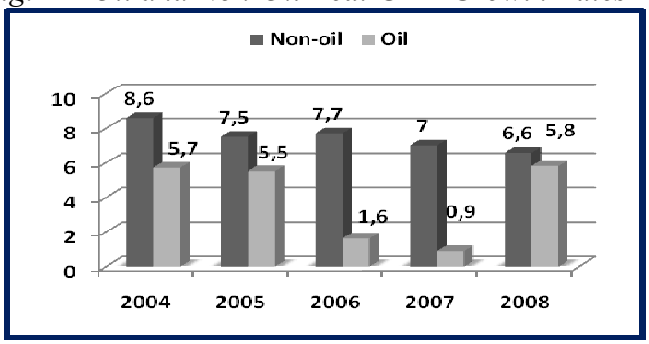
Rising prices, especially for food and housing, have resulted in a decline in real income for large sections of the population, prompting demands for wages increases. The highest increases have been granted by the public sector, enhancing the interest in state employment and making it more difficult for the private sector to hire domestic workers. Thus, the private sector's dependence on foreign labor increased in a period of strong wage demands dictated by the need to defend the purchasing power of salaries, resulting in a gradual annual increase of wages (from 7% in 2005 to 11,4% in 2008) (GulfTalent, 2009).

Overall, then, the *dollar peg*, in the presence of different economic cycles in the GCC countries and the United States, conveyed the inflationary process initiated by an increase in the international oil

demand and price into the expansion of monetary circulation that fed a mixed inflationary escalation, in which pressure on the cost side are superimposed on those on the demand side. This development fuels doubts on the opportunity of maintaining a strict connection between the currencies of the Gulf countries and the US dollar, in a context characterized by deep structural changes in their economies that highlight the differences among them and add to the demands of competitiveness.

In truth, the experiences of the seventies and eighties, which, in a short period of time, witnessed a drastic drop in the huge oil revenues accumulated after the shocks of 1973 and 1979 and the transformation of external and public balance surpluses into deficits, prompted the GCC country governments to undertake, in the late eighties, policies aimed at diversifying the production activities in order to reduce the weight of the oil sector and the dependence of economic growth on the variability of the oil prices. These policies have become more marked in the last decade. The significant oil revenues that have characterized this period were mostly used to accelerate the processes of diversification, encouraging the development of the non-oil sector at higher rates than that of hydrocarbons (Fig. 2);

Fig. 2 - Oil and Non-Oil Real GDP Growth Rates



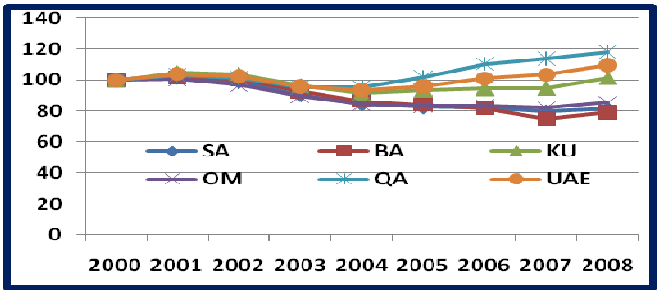
Source: IMF, *Regional Outlook: Middle East and Central Asia*

However, to the extent in which the Gulf countries proceed on the path of diversifying their economic structures, the effects of inflation on the competitiveness of products not related to hydrocarbons are particularly important given the substantial similarity of their factor endowments which causes them to essentially compete in the same

production. In reality, despite the progress made, the diversification process is still incomplete and has encouraged both the sectors directly related to oil (exploration and research, refining, marketing and distribution) and the heavy ones that take advantage of low energy prices (petrochemicals, fertilizers, aluminum, steel, iron, concrete). In this context, inflationary pressures raise the important question of their influence on the effective real exchange rates and thus the competitiveness of rival producers in international markets.

As shown in fig. 3, during the last decade, in correspondence with a general depreciation tendency in nominal effective exchange rates of all the countries of the area, in line with the dollar, effective real exchange rates posted divergent trends, reflecting the different extent of domestic inflationary imbalances. In fact, the reduction of the imbalances in Saudi Arabia, Oman and Bahrain were opposed by the appreciation in the UAE, Qatar and Kuwait. Thus, inflation has affected the competitiveness of the various members in different ways, threatening tensions that can jeopardize the objectives of the integration of the area.

Fig. 3 – Real Effective Exchange Rates in the GCC Countries, 2000 = 100



Source: our calculations on the basis of data from the IMF (*International Financial Statistics*; *IMF Country Report*)

Due to the relevance of inflationary differentials in the competitiveness of Gulf countries and the process of their diversification activities, a more careful evaluation of the costs and benefits of the dollar peg is needed. This need becomes greater in view of a future monetary union. In the absence of unification, the single countries can severe their close link with the dollar if it becomes expensive; after the monetary union it will be more difficult to do so unilaterally.

Considerations of this nature justify to the decision of Kuwait to drop the *dollar peg* in 2007 and return to the pre-existing *basket peg* system.

4. The cost of the *dollar peg* for the economy of Kuwait

The tendency to consider GCC economies as substantially homogeneous is widespread. In fact, they seem to share several features: small size, limited population, shared language and culture, an arid climate and shortage of water affecting the possibilities of the agricultural sector, great importance of the oil sector, large trade openness, high incidence of migrant labor on the population and the overall labor force, substantial population growth rates. However, behind the apparent uniformity, the advancement of the diversification process has given greater importance to their relative differences in the availability of oil and natural gas resources, importance of the oil sector, levels of income per capita; labor market, demographic growth and budgetary constraints.

These differences may make some countries particularly vulnerable to the effects of inflationary pressures, requiring careful evaluation of the effects of the exchange rate regime to be adopted. This need is particularly felt in Kuwait, given its specificity regarding: a) *the structure of the production activity*; b) *labor market and demographic growth*; c) *foreign trade and financial relations*.

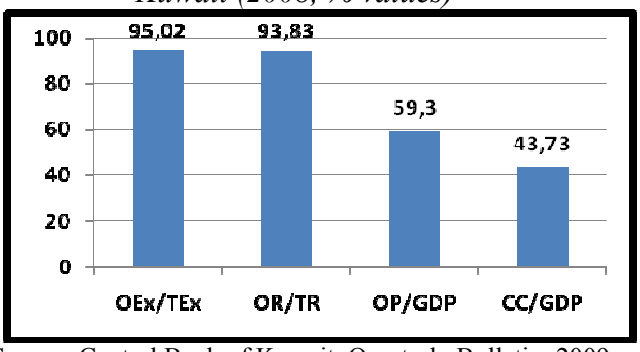
a) *The economic structure.*

Kuwait is the GCC country that has the greatest dependence on the oil sector. It posts, in fact, the highest percentage of oil exports on the total (95%) and of oil revenues on the total public ones (93.8%); while it is ranked after Qatar for the weight of hydrocarbon production on GDP (59.3%). Moreover, the high relevance of oil revenues on exports justifies the sharp incidence of the current account balance on GDP (43.73%), which appears to be the highest in the area.

These data are explained through the characteristics of the diversification process implemented in the country, which has mainly focused on the exploitation of oil resources, fostering the creation of a comprehensive and advanced industrial infrastructure dependent on oil. This led to deepening the dual nature of the country's economic structure, pitting a modern oil sector, controlled by the state and by a few

large families, against a traditional and obsolete sector mainly managed by private individuals.

Fig. 4 - Relevance of the Oil Sector on the Economic Structure of the Kuwait (2008, % values)[1]



Source: Central Bank of Kuwait, Quarterly Bulletin, 2009

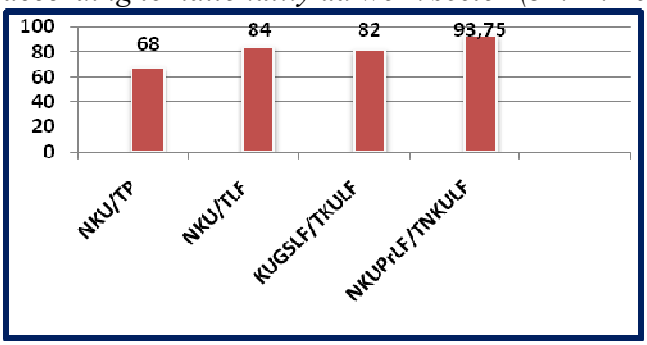
[1] Legenda: OEx/tEx (Oil Export/Total Export), OR/TR (Government Oil Revenue / Total Government Revenue); OP/GDP (Oil Production/GDP); CC/GDP (Current Account Balance / GDP).

The strong dependence on the oil sector makes the economy of Kuwait particularly vulnerable to the vicissitudes of the oil market, by tying its growth to oil demand and price trends. Thus, sudden drops in price may cause recessionary effects, while rapid and large increases may encourage appreciation of the real exchange rate, which could jeopardize the competitiveness of the non-oil sector and the needs of diversification. The costs of the previous effect, known in literature as Dutch Disease, can be amplified by the dollar peg. Indeed, the higher incidence of oil exports on total exports, in the presence of increases in oil prices, favors large surpluses in the current account balance, that the dollar peg can turn into higher monetary circulation, amplifying the inflationary effects of the increase of the oil price. It is no coincidence, in this regard, that in the past decade the weight of the current account balance to GDP in Kuwait consistently exceeded that of other economies of the area. The risks associated with a close link with the dollar in the presence of economic structures heavily dependent on the oil sector cannot be overlooked, especially when considered in the light of Kuwait's demographics and labor market, which complicate the effects of inflation.

a) *The labor market*

Kuwait is a small country with an area of about 17,818 sq km and a population of over 3.441,800 inhabitants: Kuwaitis compose 32% and immigrants 68%. Similar proportions characterize the labor market. In fact, given the scarcity of the national population, the development of the oil sector and the diversification of the production process were made possible thanks to strong inflows of foreign workers, composing today 84% of the total labor force (fig. 4). Thanks to the contributions of workers coming from India, Pakistan, Philippines, Egypt, Lebanon and Jordan, Kuwait was able to initiate a process of substantial development with growth rates above 7% on average for the 2002 -2008 period (IMF, Regional Economic Outlook), and an unemployment rate at the end of 2008 of 1,82%, resulting from the average rate of 5.33% for the Kuwaiti labor force and 1.13% for foreigners (Institute of Banking Studies, 2009).

Fig.4 – Percentage distribution of population and labor force according to nationality ad work sector (31.12. 2008) [1]



Source: Institute of Banking Studies – Kuwait, Research Unit, *Economic and Financial Data Base for Bankers, 2009*

[1] Legenda: NKU/TP (Non-kuwaiti/Total Population); NKU/TLF (Non-kuwaiti/Total Labor Force); KUGSLF/TKULF (Kuwaiti Labor Force in Government Sector/Total Kuwaiti Labor Force); NKUPrLF/TNKULF (Non Kuwaiti Labor Force in Private Sector/Total Non Kuwaiti Labor Force).

The strong dependence on foreign labor, in the presence of low unemployment rates, markedly affects the prospects of growth of the country, depending on the ability to continue to dispose of them. In reality, workers tend to concentrate in the Kuwaiti public sector, both because the employment opportunities offered by the private sector are

either too humble or too specialized to be compatible with an essentially humanistic cultural education, and because of the higher wages and benefits offered by the public sector, where, moreover, preferential recruitment policies for national workers apply. This phenomenon is common to all the countries of the area, though it tends to assume its highest representation in Kuwait, where 82% of Kuwaitis are employed in the public sector and approximately 94% of foreigners in the private sector. The non-Kuwaitis are preferred by entrepreneurs for their willingness to accept lower wages and the greater ease of dismissing them.

Thus, migration, despite having secured a flexible global labor market, also promoted its segmentation that impedes the movement of domestic and foreign workers between the public and private sector and rests the continuing process of diversification on the possibility of attracting foreign labor without losing the advantages of flexibility. In this context, the inflationary effects of the dollar peg may be particularly relevant for the country's economy. The redistributive effects are dumped, in fact, on a population and a workforce characterized by a predominance of non-Kuwaitis, with the risk of arousing, in addition to demands for wage increases, a climate of tension and intolerance. In Kuwait, moreover, the redistributive effects of inflation on the labor market are exacerbated by the structure of its trade flows.

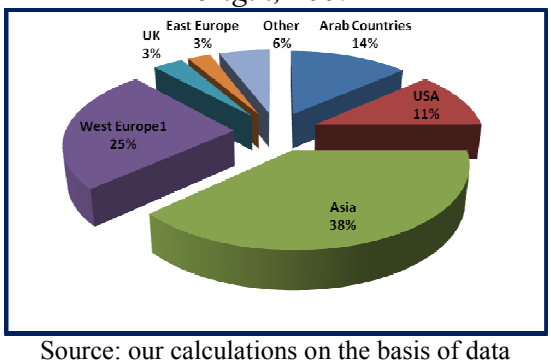
b) Trade flows

For economies like that of Kuwait - small and open to foreign trade - trade relations count on and promote the choice of an exchange rate regime that reduces transaction costs, related to the conversion of currency and foreign exchange risk. This requires careful consideration of the direction and composition of trade flows.

With reference to the direction of trade, the main areas of origin of Kuwaiti imports are Asia and Europe (fig. 5): in fact, about 25% of Kuwait's imports come from Western European countries, surpassing those from the United States (11%) and ranking second to those from the Asian area (38%); whereas Europe is a small partner in terms of exports. A significant flow of Kuwaiti exports, amounting to 7% of the total, goes, in fact, to only four EMU countries (the Netherlands, Belgium, France and Spain). The main market of destination of Kuwaiti goods is, however, Asia and, in particular, Japan, Korea, India, Singapore and China (fig. 6).

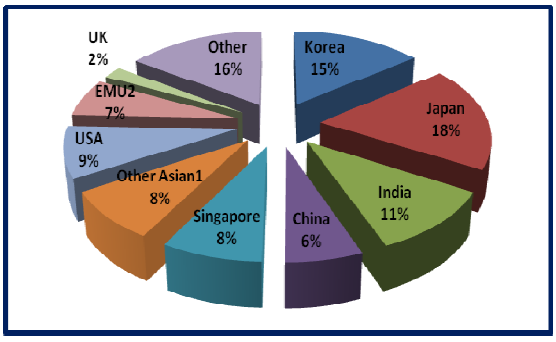
With reference to the composition of trade flows, hydrocarbons are the main export item, with an impact on the total that exceeds 95% and is mainly directed to Asian countries. Imports, however, consist mainly in foodstuffs, manufactured goods and machinery and come mostly from European countries.

Fig. 5 - Imports of Kuwait According to Country or to Region of origin, 2007



Source: our calculations on the basis of data from the CBK, Quarterly Bullettin,
[1]Non including UK

Fig. 6- Exports of Kuwait According to Country or to Region of Destination, 2008



Source: our calculations on the basis of data from the IMF
[1]Including Pakistan, Indonesia,Bangladesh, Thailand, Malaysia
[2]Including only Netherlands, France, Spain, Italy

In this context, the phenomenology of exchange rate system is particularly important. Indeed, the foreign currency revenues related to

exports are mainly in dollars, both because the hydrocarbons are quoted in the US currency, and because they are widely used as a transaction currency in the Asian economies. On the contrary, the payment of their imports is largely in euro, given the current practice in European countries to list their exports in their national currency. The relations of exchange between the euro and the dollar have, therefore, great importance for the countries of the Gulf area and, in the last decade, in the presence the dollar peg, they caused huge monetary losses due to the depreciation trend of the US currency compared to the euro that has characterized most of this period.

The depreciation of the dollar against the euro, moreover, implying also that of the dinar, has led to rising prices in domestic currencies for goods imported from the EU. This is an effect that is particularly relevant for the economies such as the Kuwaiti: small; open to international trade; highly specialized in the production of hydrocarbons; with a segmented labor market characterized by the significant incidence of foreign workers; with limited agricultural production and manufacturing, which forces them to import a large share of their consumer goods, raw materials, intermediate inputs and capital goods. The classification of imports on the basis of their economic use demonstrates that the purchase of foreign consumer goods and intermediate products are respectively 39% and 40% of total imports (Central Bank of Kuwait, Quarterly Bulletin). In this context, the pass-through effect can be particularly burdensome for Kuwait, resulting in increased costs of production and consumer prices. In this regard, the high incidence of imported products in the wholesale price index, estimated at 769.18‰, is significant (Central Bank of Kuwait).

In considering consumer prices, equally important is the country's high dependence on imported agricultural products and foodstuffs, which constitute about 26% of imports of consumer goods (Central Bank of Kuwait). In fact, the country’s arid climate, the scarcity of arable land and the high rates of population growth make the domestic supply fall short of domestic needs, forcing them to buy significant quantities of foodstuffs from abroad, particularly Asia and Europe. As they occupy an important place in the population’s consumption, about 200‰, an increase in import prices caused by the depreciation of the dollar, in *dollar peg* conditions, can drive their prices up, worsening the living conditions of the working classes, and especially of migrant workers, fueling demands for higher wages and social tensions.

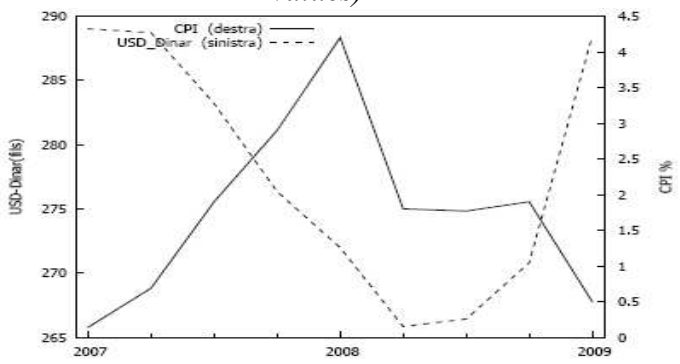
5. The experience of *re-pegging* to the *basket*

On May 20, 2007, Kuwait unilaterally withdrew its commitment to peg its currency to the dollar, made in 2002 as a first step towards the monetary integration of the GCC countries, and restored the pre-existing *basket peg* regime, anchoring the dinar to a basket of currencies, whose composition and weights were not disclosed. The decision was motivated by the need to curb inflationary pressures arising from the prolonged depreciation of the dollar against major currencies, although, unlike other area coin, the dinar was allowed to fluctuate within margins of ± 3, 5% around the declared parity of 299.63 *fils* per dollar[2].

Given the importance that the anti-inflationary objective has taken in the choice of the exchange rate regime, it is interesting to review the dynamics followed by prices after the *re-pegging* to the *basket* in the light of that choice, although we are fully aware that other important variables have heavily influenced its development in recent years.

As shown in Fig. 7, in 2007-2009, inflation and dollar-dinar exchange rates have moved in an essentially antithetical manner, featuring two different sub-periods: in the first (2007 - July, 2008), the revaluation of the dinar against the dollar has been accompanied by an accentuation of inflationary pressures; in the second (July 2008, 2009), the depreciation has been associated with their moderation.

Fig. 7 - Inflation Rates and Exchange Rates, 2007-2009 (quarterly values)



Source: Central Bank of Kuwait, Quarterly Bulletin

[2] One Kuwaiti dinar equals to 1,000 fils

From 2007 to mid 2008, the dinar has consistently appreciated against the dollar. Appreciation was accentuated after abandoning the dollar peg and reached its peak in July 2008. Overall, during the period from May 2007 to July 2008, the dinar appreciated by more than 8 %, from 288.27 to 265.27 fils per dollar. In the same period, contrary to expectations, inflation has significantly accelerated: the quarterly rates of variation in the consumer price index have risen consistently, from 0.69% in the second quarter of 2007 to 4.2% in the first quarter of 2008. Overall, the cumulative increase in prices during that period was more than 10%.

Since the second half of 2008, these trends are reversed. The dinar started to depreciate against the dollar by more than 10% between July 2008 (265.27 fils) and March 2009 (291.87 fils), while the quarterly rates of growth in the index of consumer prices rose in same period from 1, 8% to 0.5%.

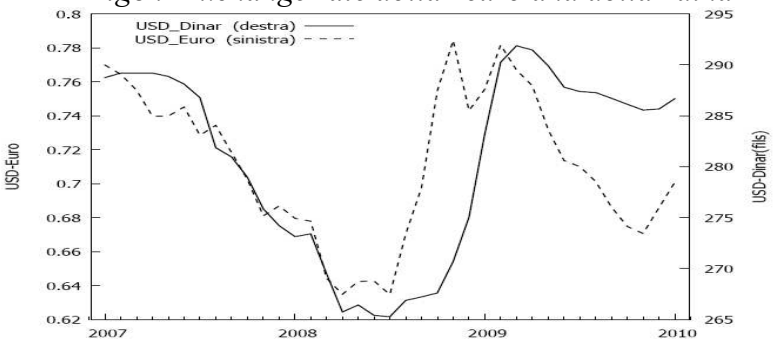
Some explanations have been given to justify these trends: what happened in the first period was attributed to the uncertainty that accompanied the decision to abandon the dollar peg, while the trend of the second period was attributed to economic policy decisions aiming at supporting the continuation of the growth process.

With reference to the first period, in particular, the burst of inflationary pressures, despite the appreciation of the dinar against the dollar, was motivated by the lack of transparency that has characterized the introduction of the *basket peg*. According to a widespread opinion, the failure to disclose the composition of the basket and the weights of currencies created a climate of uncertainty that fueled expectations of a revaluation of the dinar and speculative pressures, with a consequent influx of capital from abroad. The need to contain the pressure towards appreciation of the national currency has pushed down interest rates, encouraging the resort to borrowing, the expansion of circulation credit and inflationary pressures (M.S. Khan, 2008).

With reference to the second period, however, the coexistence of the depreciation of the dollar with the easing of inflationary pressures was attributed to a deliberate economic policy strategy aimed at curbing the spread of the recessionary effects resulting from the international economic and financial crisis. The depreciation of the dinar, in fact, could have increased the revenues in national currency resulting from oil exports, thus facilitating investments in public activities supporting the national economy in the presence of a decline in global demand (Reuters, 2009).

While agreeing with the former explanations, we believe that the different trends shown by the evolution of exchange rates and prices may have been influenced by the new exchange rate regime and, in particular, the composition of the *basket* and its possible variations. This impression is based on the strong resemblance, visually ascertainable, characterizing the monthly trend of the dinar-dollar exchange rate and the dollar-euro one in the period 2007-2009. As shown in Fig.8, the dynamics of the exchange rate of the dinar compared to the US currency tends to reproduce that of the dollar-euro exchange rate, justifying the possibility that the weight of the euro in the basket may have affected the relationship between the Kuwaiti and US currencies. In fact, the correlation coefficient we estimated between the two series is positive and equal to 0.5997 and gives some foundation to the previous option.

Fig8 .- Exchange rate dollar-euro and dollar-dinar



Source: Central Bank of Kuwait, Quarterly Bulletin

The next part of this work proposes and econometric estimation that aims at verifying the composition of the basket and its possible changes in the belief that the weight of the euro in the basket may have had some influence on price trends observed more recently. Obviously, it is clear that the narrowness of the survey period and the concurrence of a set of variables closely related to a period of deep uncertainty and imbalances in the international and Kuwaiti economy does not allow a precise estimate of the impact of the basket changes on inflation dynamics.

6. The estimation of weights and the econometric model

The estimation of the weights of the currencies making up the currency basket of Kuwait is conducted, with appropriate changes, on an approach devised by Frankel (1993) and Frankel and Wei (1994.1995), based on the *ordinary least square regression* (OLS) for the exchange rate of domestic currency compared to those in the basket and which the two economists propose when it is anchored to a basket with limited flexibility [3]. In later studies they developed a new and more appropriate approach for basket pegging where exchange rates fluctuate around a stated fixed rate and where, in addition to the estimated weights of the currencies, there is also the need to evaluate the flexibility *de facto* of the exchange rate compared to the central parity. [4] In the case of Kuwait, however, the original method is preferred since former analyses conducted again by Frankel and Wei through the new approach, with reference to the eighties of last century, estimated a coefficient concerning the flexibility of the central exchange rate close to zero, in line with the classification *de facto* of exchange systems implemented by the International Monetary Fund, which defines the one of Kuwait as a "*conventional pegged arrangement to a composite*" (IMF, 2009).

In this case, moreover, besides the weights, the currencies composing the basket should also be identified since the Central Bank of Kuwait has not disclosed its composition. This, however, can be reconstructed on the basis of the relevance of the major currencies financing the country's imports. Data provided by the Institute of Banking Studies of Kuwait (2009) reveal in order of importance: the dollar, concerning 60.7 % of imports in 2007; the euro, with an incidence of 11.3 % and the yen with 8,4 %. Thus, it is realistic to suppose that these currencies are included in the country's basket. Moreover, it is appropriate to include also the British pound. Indeed, despite its low weight in the financing of imports (0.9 %), it is probably used in financial transactions, given the broad

[3] The same technique was subsequently employed by Bénassy-Quéré-Agnès (1999), Ohno (1999), Frankel, Schmukler, Servén (2001), Benassy, Quéré, Coeur, Mignon (2004). It also has been recently used by Eichengreen (2006), Shah, Zeleis and Patnaik (2005); E. Ogawa, T. Yoshimi (2008) to verify the weight of the currencies that make up the basket peg of China.

[4] A new contribution has been recently proposed by Frankel and Xie (2010) for the case when the countries do not maintain a single consistent regime for more than a few years at a time, but rather switch parameters every few years and even switch regimes.

relevance of the London financial market. The Swiss franc, instead, given its limited use in the country's commercial trade, is used as a constant to measure the variability of the exchange rate of the dinar against those allegedly composing the basket[5].

With these clarifications the regression model is as follows:

$$\Delta \ln y_{Dinar/FRsv} = \alpha + \beta_1 \Delta \ln e_{USD/FRsv} + \beta_2 \Delta \ln e_{JPY/FRsv} + \beta_3 \Delta \ln e_{ERsv/FRsv} + \\ + \beta_4 \Delta \ln e_{pound/FRsv} \quad \textbf{(1)}$$

In it:

- $\Delta \ln y_{Dinar/FRsv,,}$ $\Delta \ln e_{USD/FRsv,,}$ $\Delta \ln e_{JPY/FRsv,,}$ $\Delta \ln e_{ERsv/FRsv,,}$ $\Delta \ln e_{pound/FRsv}$ represent, respectively, the exchange rate of the dinar, the dollar, the yen, the euro and the pound against the Swiss franc[6];
- coefficients ß are the weights of the respective currencies in the basket. The closer the coefficient is to 1, the greater is the tie between the dinar and the currency taken into account;
- regression is based on first differences of logarithms of exchange rates:[7]
- it is also assumed that the standard error is close to zero and R^2 is near the unit.

However, the proposed model seems to ignore the modern econometric contributions in "*time series*". Indeed, the time series on exchange rates, even in studies on the percentage changes, do not always represent the result of a stationary process[8]. Several tests on the regression model outlined by Equation (1) - from Durbin-Watson's to

[5] Frankel and Wei (1994, 2006), Ohno (1999) and Eichengreen (2006) have used the Swiss franc as the constant; Benassy Quéré (1999) the dollar Yamazaki (2006), the Canadian dollar. Subsequent contributions (Frankel and Wei, 2007) are regarded a basket of currencies as a constant, such as, for example, the Special Drawing Rights.

[6] In particular, if the fluctuations of the dinar against the franc are largely explained by those of the dollar against the Swiss currency we can deduce the existence of a close anchorage between the Kuwaiti and the US currencies.

[7] The authors have carried out a logarithmic analysis motivated by the need to reduce the standard error for each value of the coefficients obtained and to analyze stochastic processes through a linear model.

[8] See: *Appunti di analisi delle serie storiche*, Riccardo Lucchetti -2008, free access online, in "Lucchetti home page".

Ljung-Box's-, and the observation of the correlogram could highlight some issues related to autocorrelation especially among the residuals[9].

For these reasons, in our work we believe it best to integrate Frankel's OLS model with an "*Auto-Regressive Moving Average*"[10] approach supported by the *Kalman filter*[11]. Furthermore, given the volatility that normally characterizes the daily exchange rates, we also included the Hodrick-Prescott filter in the analysis as a method of leveling the time series.

With these changes our regression model takes the following form:

$$\Delta d.\ln y_{Dinar/FRsv} = \alpha + \beta_1 \Delta d.\ln e_{USD/FRsv} + \beta_2 \Delta d.\ln e_{JPY/FRsv} + \beta_3 \Delta d.\ln e_{ERsv/FRsv} + + \beta_4 \Delta d.\ln e_{pound/FRsv} + \mu_t \quad \textbf{(2)}$$

$$\alpha_{0,t} = \alpha_{0,t-1} + \eta_{0,t}$$
$$\beta_{1,t} = \beta_{1,t-1} + \eta_{1,t}$$
$$\beta_{2,t} = \beta_{2,t-1} + \eta_{2,t}$$
$$\beta_{3,t} = \beta_{3,t-1} + \eta_{3,t}$$
$$\beta_{3,t} = \beta_{4,t-1} + \eta_{3,t}$$

and it is analyzed in an autoregressive moving average (ARMA).
Based on this amended model, the estimation of the weights of the currency basket of Kuwait is conducted with reference to three different periods: 2000-2003, June 2007-July 2008, August 2008-February 2010. The first period is the one preceding the decision of Kuwait to adopt the dollar-peg; the second, following the re-pegging to the basket, includes the period of appreciation of the dinar against the dollar and accentuations of inflationary pressures; the third period includes the phase of depreciation of the Kuwaiti currency against the US one and the mitigation in price increases. Regarding the data, the first series uses monthly data, while the second and third use daily data (maximum 5 days). The data were drawn from the "*Pacific Exchange Rate Service 2010*"[12] and then estimated through a model "AR-MA (2;2)"

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[9] For a more detailed examination of these issues, see M. Mele (2009)
[10] For the analysis were used two econometric software: Stata SE ver.11A; Gretl ver.1.8.4.
[11] McKinnon (2002) and Ogawa (2006) used the Kalman filter to estimate basket peg regimes in Southeastern Asia. However, it has been used to a simple OLS model where the coefficients assumed temporal variations.
[12] The University of British Columbia, www. http://fx.sauder.ubc.ca/data.html

7. Results[13]

Time 2000-2003

Model 1: ARMAX (2;2), using the observations 2000-2003 (T = 46)
Dependent variable: ld_Dinar
Standard error based on Hessian
Estimated using Kalman's filter (exact MV)

	Coeff.	*Std. Err.*	*z*	*p-value*	
const	-0,000363643	0,000131275	-2,7701	0,00560	***
phi_1	1,47949	0,116568	12,6920	<0,00001	***
phi_2	-0,766567	0,115706	-6,6251	<0,00001	***
theta_1	-1,99272	0,0910599	-21,8836	<0,00001	***
theta_2	1	0,0909746	10,9921	<0,00001	***
ld_Dollar	0,895922	0,00825522	108,5280	<0,00001	***
ld_Euro	0,0442709	0,0173746	2,5480	0,01083	**
ld_Pound	0,0169509	0,0262529	0,6457	0,51849	
ld_Yen	0,0146352	0,0122557	1,1941	0,23242	

Log-likelihood	220,5355	Akaike	-421,0710
Schwarz	-402,7846	Hannan-Quinn	-414,2208
Adj R-squared	0,987079	Root MSE	0,002611

Time 3/06/2007 to 15/7/2008

Model 2: ARMAX (2;2), using the observations 2-260 (T = 259)
Dependent variable: ld_Dinar
Standard error based on Hessian
Estimated using Kalman's filter (exact MV)

	Coeff.	*Std. Err.*	*z*	*p-value*	
const	5,53124e-05	0,000140198	0,3945	0,69319	
phi_1	1,8561	0,0353191	52,5521	<0,00001	***
phi_2	-0,891073	0,0347282	-25,6585	<0,00001	***
theta_1	0,626479	0,0705524	8,8796	<0,00001	***
theta_2	0,190065	0,0650722	2,9208	0,00349	***
hpt_ld_USD	0,574081	0,0813774	7,0545	<0,00001	***
hpt_ld_Euro	0,179631	0,145558	1,2341	0,21717	
hpt_ld_Pound	-0,0513517	0,0740543	-0,6934	0,48804	
hpt_ld_Yen	0,096884	0,0679969	1,4248	0,15421	

Log-likelihood	2245,636	Akaike	-4471,273
Schwarz	-4435,704	Hannan-Quinn	-4456,972
Adj R-squared	*0.899621*	Root MSE	*0.000588*

[13] *** p<0.01 ; ** p<0.05; *p<0.1

***Time* 5/08/2008 al 28/02/2010**

Model 3: ARMAX (2;2), using the observations 2-393 (T = 392)
Dependent variable: ld_Dinar
Standard erro based on Hessian
Estimated using Kalman's filter (exact MV)

	Coeff.	*Std. Err.*	*z*	*p-value*	
const	8,2518e-05	0,000165853	0,4975	0,61881	
phi_1	1,7664	0,0376842	46,8737	<0,00001	***
phi_2	-0,786873	0,0376649	-20,8914	<0,00001	***
theta_1	0,655349	0,0560097	11,7007	<0,00001	***
theta_2	0,21104	0,0528842	3,9906	0,00007	***
hpt_ld_USD	0,811498	0,0312324	25,9825	<0,00001	***
hpt_ld_Euro	0,155858	0,0437335	3,5638	0,00037	***
hpt_ld_Pound	-0,0164269	0,0225378	-0,7289	0,46609	
hpt_ld_Yen	0,00538276	0,0221002	0,2436	0,80757	

Log-likelihood	*3445.618*	*Akaike*	*-6871.235*
Schwarz	*-6831.522*	*Hannan-Quinn*	*-6855.496*
Adj R-squared	*0,910690*	Root MSE	*0,000674*

From the results of the informative criteria, it is shown that the ARMA-"Kalman" model (2,2) presents for its similar values, therefore, doesn't differentiate itself. The model, moreover, doesn't demonstrate common factors, confirming the reliability of the data obtained: an estimation of the robust initial type, it has permitted moreover to limit the effect of the heteroschedasticity of the model, therefore avoiding an ARCH analysis.

The values of R^2 adjusted for each regression (developed in the initial OLS model) range from 89% to 98%, indicating that the explanatory variables justify well the dependant variables; standard errors of regressions showed values close to zero, with a maximum value of 0.002611. Finally, analyzing the respective charts of the correlogram of residues the estimate for each period does not reveal any autocorrelation.

Analysis of the coefficients for the three analyzed periods clearly shows that the weight of the considered currencies (dollar, euro, yen and pound sterling) has changed over time.

In the first period, 2000-2003, the currencies whose weight is significant in the basket (from the analysis of the *p-value*) - besides the constant- are the dollar and euro, whose coefficient is respectively 0.89 and 0.04. It is obvious that the influence of the European currency on the Kuwaiti dinar is almost nil, and this may be due to its still young life.

In the second period, June 2007 - July 2008, only the US currency is significant. Moreover the value of its coefficient is about 0.6, and the R^2 is 0,8996. Although in May 2007, Kuwait officially came under a basket peg, in the period under review it actually continued to closely peg the dinar to the dollar and this may have contributed to worsen the inflationary trends, leading to a change in the composition of the basket. The almost exclusive relationship with the dollar may, in fact, have intensified the expansion of the monetary circulation related to inflows of speculative capital that followed the *de-pegging*.

The results change dramatically when we analyze the latest period, August 2008-February 2010. In this period, the only currencies that appear to compose the basket are the dollar and the euro. However, while the weight of the US currency falls from 0,89 of the first period to 0.81 of the third, that of the European currency rises from 0,04 to 0.16. There are therefore strong presumptions supporting the impression that the inflationary consequences of the link with the dollar may have led Kuwait to increase the weight of the euro in its basket.

8. Conclusion

For economies such as those of the Gulf - small, highly specialized in a few productions and open to foreign trade - the commercial and financial relations matter and make it particularly appropriate to consider the choice of an exchange rate regime that is not a vehicle of inflationary pressures and reduces transaction costs related to currency conversion and exchange risks. In the new millennium the *dollar peg* has not complied with these requirements. In the presence of diverging economic cycles in the GCC countries and the United States, it has amplified the inflationary impulses initiated by the increasing international demand for oil and its rising price, through a liquidity and a cost effect.

Awareness of the inflationary consequences of the *dollar peg* has thus cast doubt on the opportunity to maintain a rigid link between the Gulf and the US currencies, in a context characterized by deep structural changes in the economies of the region, which would highlight the differences between them and add to the demands of competitiveness.

Doubts on the benefits of pegging to the dollar have been more relevant for Kuwait, taking into account the peculiarities of its production structure and the characteristics of its labor market, which

tend to increase the inflationary effects of the dollar peg. In fact, given its heavy dependence on the hydrocarbon sector and the high incidence of oil exports on the total, the link with the dollar may boost the expansionary effects of oil surpluses on monetary circulation. On the other hand, the marked prevalence of immigrants in the total population and labor force, low unemployment rates and the preference of Kuwaitis for public employment, tend to exaggerate the redistributive effects of inflation, increasing the risk of wage demands and social tensions.

In this context, the choice of Kuwait to peg the dinar to a basket of currencies widely used in trade and finance is perfectly justified in terms of economic logic. It is consistent with the requirement that the definition of the exchange rate takes also into account the direction and intensity of trade and financial flows on the international market. In other words, the weight of currencies in anchor peg exchange rate regimes should reflect the structure of foreign economic and financial relations. In this respect, therefore, the decision of Kuwait to include the euro in its basket and increase its weight is fully justified, given the importance of the European currency in its economic and financial trade.

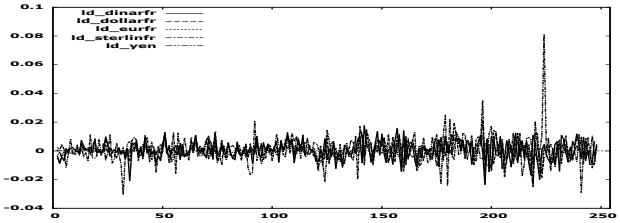
The experience of Kuwait is a useful example for other GCC economies which, despite their close relations with the euro countries, neglect their money in their own exchange rate systems. The importance of their trade with EU countries suggests, in fact, the opportunity to increase the weight of the euro in their systems. Anchoring to a basket peg that includes the euro could bring undeniable benefits: firstly, reducing the dependence of the monetary circulation of the GCC economies from the US monetary policy choices; secondly, limiting the fluctuations in effective exchange rates of national currencies and the risks linked to renewed appreciation processes of the euro against the dollar.

However, at present, the choice of Kuwait to anchor the dinar to a basket peg raises important questions about the future of the planned monetary union. Indeed, although justified in terms of economic logic, this choice differs from that of other partners who continue to adopt a dollar peg.

APPENDIX

Fig 1 (logarithmic differences of the variables)

3/09/2007 al 15/10/2008



5/09/2008 al 20/12/2009

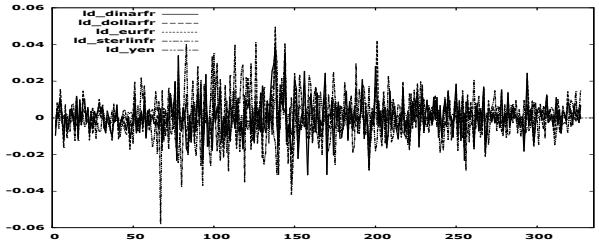
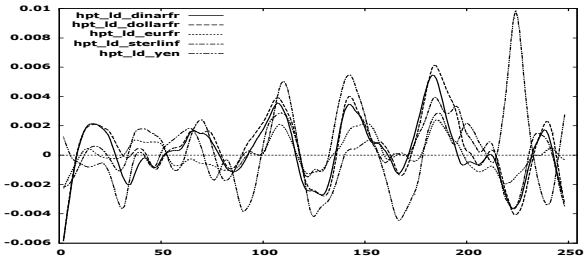


Fig 2 (Hodrick & Prescott filter-lamda=100)

3/09/2007 al 15/10/2008



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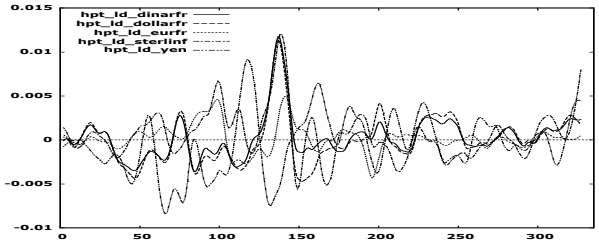

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